Water Year 2018

Exploratory Juvenile *Oncorhynchus mykiss* Sampling in Coyote Creek

Prepared by:

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Environmental Mitigation and Monitoring Unit

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Introduction

The purpose of this effort was to detect presence of steelhead/rainbow trout (*Oncorhynchus mykiss*; *O. mykiss* for the remainder of the document), record presence/absence of other fish species in Coyote Creek, and develop an understanding of the efforts required to conduct this level of monitoring in Coyote Creek. Three locations on Coyote Creek were sampled on October 22, 2018. Flow at the Santa Clara Valley Water District ALERT Gage Coyote at Madrone 5082 was approximately 48 cubic feet per second (cfs) at the time of sampling. This flow level made establishing and maintaining block nets difficult. Methods were altered to account for sampling under these conditions, including only conducting single electrofishing passes. Results are summarized at each location sampled and include the total number captured for the single pass electrofishing effort.

Methods

Site Selection and Habitat Typing

The three sampling reaches ranged from 41-m to 55-m in length. These sites were not randomly selected and had not been sampled for fisheries by any other effort in the watershed. Biologists chose the sites in the field by selecting for certain habitat features along the creek that they predicted to have the highest likelihood for supporting *O. mykiss*. The sampling reaches were approximately 3.8 kilometer downstream of Anderson Dam (Figure 1). Prior to the start of sampling, ambient conditions (weather) were noted and water quality (dissolved oxygen, conductivity, and temperature) were collected at the downstream end of the sampling stations. Ocular estimates of percent cover of macrophytes/emergent vegetation, boulders, woody debris, undercut banks, overhanging vegetation, submerged roots (live and dead), and artificial structures were recorded for each sampling station (Table 1). Each habitat feature was ranked on a 0-4 point scale described below, with 0 being absent and 4 being a very heavy presence (Table 1).

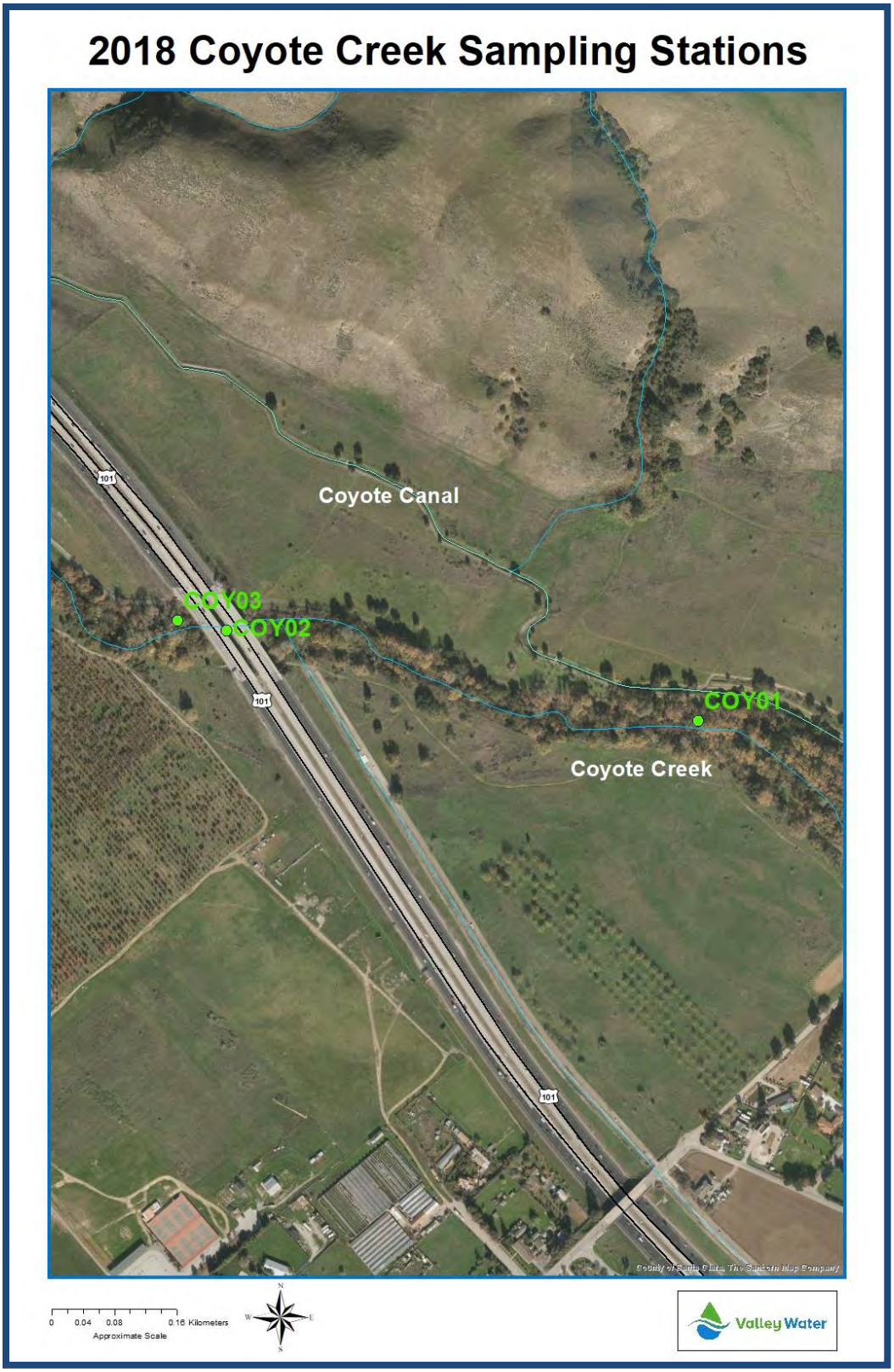

Figure 1: Coyote Creek juvenile rearing sampling stations.

Table 1: Ocular estimate scale (Ode 2007).

Scale	0	1	2	3	4
Percent Coverage	0%	<10%	10-40%	40-75%	>75%
Descriptor	Absent	Sparse	Moderate	Heavy	Very Heavy

Electrofishing

Block nets were installed at both the upstream and downstream ends of sampling reaches to block immigration into and emigration out of sampling reaches. Electrofishing commenced from down to upstream and worked laterally across the stream to ensure all portions of the wetted width were sampled. Smith-Root LR24 Backpack Electrofishing Units were used at all sampling stations. The LR24 quick set option was used to establish the initial power and waveform settings. The quick set output was verified with conductivity readings. Electrofishers were run using direct current, at a frequency of 30 HZ, duty cycle of 12%, and voltage that ranged between 175 and 190 volts. The electrofisher operator was flanked by two netters. Verbal communication and spatial awareness were used to ensure the entire width of the stream was covered. Single-pass electrofishing methods were deployed at all stations.

Fish Processing

Fish were held in aerated dark-colored containers during processing. Length measurements were recorded to the nearest millimeter at the fork of the tail for all *O. mykiss* (fork-length). Fin clips were taken for genetic analysis of all *O. mykiss* from the caudal fin. Clips were a 1-2 mm square. Medical grade scissors used to collect the clips were sterilized with an alcohol dilution with a final concentration of 60-80% isopropyl. Tissue samples were placed in sterile chromatography paper and placed in a labeled envelope denoting the field specimen number, species, stream, stream location, date, and fork-length. Tissues collected will be sent to the NMFS Southwest Fisheries Science Center.

Results

COYO1

This sampling station on Coyote Creek was downstream of the Walnut Picnic Area off the Coyote Creek Trail. The sampling reach was 55-m long and included riffle and glide habitat (Figure 2). Water quality and habitat complexity at the time of sampling is summarized in Table 2.

Figure *2*: Photo of station COYO1*.*

Table 2: Station COYO1 water quality data and ocular estimates of habitat complexity.

Water Quality			
Conductivity (µS/cm)	**Temperature (°C)**	**Dissolved Oxygen (mg/l)**	**Turbidity (NTU)**
413	16.27	10.88	15.4

Habitat Complexity Scoring						
Macrophytes/Emergent Vegetation	**Boulders**	**Woody Debris**	**Undercut Banks**	**Overhanging Vegetation**	**Roots**	**Artificial Structures**
2	2	2	1	3	1	0

Three species of fish were captured during the survey: prickly sculpin (*Cottus asper*), Sacramento sucker (*Catostomus occidantalis*), and three-spined stickleback (*Gasterosteus aculeatus*). The most abundant species encountered was prickly sculpin (n=14; Table 3).

Table 3: Number captured at Station COYO1 on Coyote Creek.

Species	Native	Number Captured
Prickly sculpin	Yes	14
Sacramento sucker	Yes	1
Three-spined stickleback	Yes	1

COYO2

The sampling station was located directly under HWY 101. The sampling reach was 41-m long and consisted of run habitat (Figure 3). Water quality and habitat complexity at the time of sampling is summarized in Table 4. Prickly sculpin (n=16) was the only species captured at this station (Table 5).

Figure *3*: Photo of station COYO2*.*

Table 4: Station COYO2 water quality data and ocular estimates of habitat complexity.

Water Quality			
Conductivity (µS/cm)	Temperature (°C)	Dissolved Oxygen (mg/l)	Turbidity (NTU)
417	16.52	9.38	42.3

Habitat Complexity Scoring						
Macrophytes/Emergent Vegetation	Boulders	Woody Debris	Undercut Banks	Overhanging Vegetation	Roots	Artificial Structures
1	1	1	1	1	1	4

Table 5: Number captured at Station COYO2 on Coyote Creek.

Species	Native	Number Captured
Prickly sculpin	Yes	16

COYO3

This sampling station was located downstream of HWY 101 off the Coyote Creek Trail. The sampling reach was 44-m long and included riffle habitat (Figure 4). Water quality and habitat complexity at the time of sampling is summarized in Table 6.

Figure 4: Photo of station COYO3.

Table 6: Station COYO3 water quality data and ocular estimates of habitat complexity.

Water Quality			
Conductivity (µS/cm)	Temperature (°C)	Dissolved Oxygen (mg/l)	Turbidity (NTU)
413	16.27	10.88	15.4

Habitat Complexity Scoring						
Macrophytes/Emergent Vegetation	Boulders	Woody Debris	Undercut Banks	Overhanging Vegetation	Roots	Artificial Structures
2	2	2	1	3	1	0

Three species of fish were captured during the survey: prickly sculpin, *O. mykiss*, and Sacramento sucker (Table 7). The most abundant species encountered was prickly sculpin (n=18). *O. mykiss* fork-lengths were 154 mm and 113 mm (Figure 5). An additional *O. mykiss* was observed by a netter, but it was not captured.

Figure 5: Photos of the two *O. mykiss* captured at station COYO3.

Table 7: Number captured at Station COYO3 on Coyote Creek.

Species	Native	Number Captured
Prickly sculpin	Yes	18
O. mykiss	Yes	2
Sacramento sucker	Yes	1

Conclusion

Species captured included: prickly sculpin, Sacramento sucker, three-spined stickleback, and *O. mykiss*. No non-native species were encountered during this sampling effort. Two *O. mykiss* were captured in one of the reaches. This indicates that the abundance is low, but these fish are persisting in Coyote Creek.

Work Cited

Ode, P.R. 2007. Standard operating procedures for collecting macroinvertebrate samples and associated physical and chemical data for ambient bioassessments in California. California State Water Resources Control Board Surface Water Ambient Monitoring Program (SWAMP) Bioassessment SOP 001.